SEWABLE SNAP FASTENER APPARATUS AND METHOD

This application claims the benefit of U.S. Provisional Application No. 60/402,390 filed August 09, 2002.

BACKGROUND

This invention relates generally to fasteners employed for temporarily joining two pieces of material or fabric, and more particularly to snap type fasteners for detachably joining such material.

Snap type fasteners are well known in the prior art, and are widely employed for joining a variety of materials including cloth, canvas and the like. Typically, snap fasteners include opposing male and female portions which are respectively fixed to opposing pieces of material that are to be joined. Such snap fasteners are usually so fixed by methods that include, for example, sewing the fastener through holes provided in the manufacturing process at predetermined locations on the fastener. Some other designs employ tape portions that extend from the fastener for sewing the fastener to the material. Another method of attachment is to mechanically attach the fasteners directly

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

to the material by bending or crimping portions of the fastener.

Some of the early designs typically included either holes for stitches to pass through for attachment to a garment, or a combination of tape disposed to receive stitches for attachment of the snap fastener to a garment. Examples include U.S. Patent 1,703,796 which shows a snap fastener including holes provided for stitching the same to a garment. U.S. Patent 2,113,771 issued to Roseman shows a snap fastener secured to fastener tape which is sewn to a garment. Similarly, U.S. Patent 2,202,854 shows a fastener secured between layers of fabric which is sewn around the fastener for attachment to material.

Later issued patents likewise incorporated similar construction including U.S. Patents 2,838,820; 3,050,805; 3,152,376; and 3,540,086 which all show either slots or holes for receiving stitches that attach the fastener to a fabric or material. In addition, U.S. Patent 3,999,257 issued to Ishizaki in 1976 shows a fastener having prongs that are pierced through fabric for attachment thereto. It should be noted that each of the above designs are similar in that the construction and method for attachment of the fasteners is likely to entrap dirt and debris within the fastener body.

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

Other more recent designs include Design patent No. 301,567 issued to Burke which discloses holes for stitches to pass through for attachment to a fabric. U.S. Patent 4,805,272 issued to Yamaguchi shows a fastener fixed to a tape which is sew on to a garment. U.S. Patent 5,724,707 issued to Kirk et al illustrates an interlocking attaching system for attaching objects to a garment. This design is expensive to produce and difficult to install. U.S. Patent 5,758,589 discloses a plastic closure elements that is removably connected to holding bars that position the closure elements. U.S. Patents 6,079,083 and 6,199,248 issued to Akashi wherein each design shows a snap fastener formed integrally with tape which is sewn to a garment. Finally, U.S. Patent application No. 0034927 by Matsushima was published in 2001 disclosing snaps being formed of resin across a pair of tapes for attachment to a garment.

Importantly, most of the above noted designs tend to employ construction that complicates the installation procedure of the fastener to the material, or require steps of installation that necessitate precise techniques. Further, most of the above designs include features that do not address uses where harsh environments that produce dirt and debris are common.

Accordingly, a need exits for a snap fastener that is simple, inexpensive and that is easily fixed to the material quickly and without the need for additional materials or

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

precise steps. A fastener where the construction thereof is made for harsh outdoor environments, and is constructed to minimize the collection of foreign material such as dirt within the fastener.

SUMMARY

One object of the invention is to releasably secure two pieces of material together.

A second object is to reduce the accumulation of dirt and debris from collecting in the fastener that joins pieces of material.

Another Object is to provide means for adjusting the relationship of two pieces of material joined by a snap type fastener.

Yet another object is to eliminate the need for mechanical means to attach a snap type fastener to a piece of material.

A further object is to secure two pieces of material without creating reflective surfaces.

Still another object is to reduce the costs of producing and installing a fastener for fastening together two pieces of material.

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

The invention is a sewable snap fastener constructed of resilient material for receiving stitches from a sewing process where a needle in the sewing process penetrates the sewable snap fastener thereby creating a hole for the required stitch. The sewable snap fastener is provided for detachably fastening together two opposing pieces of material. In brief, the sewable snap fastener comprises a socket member configured and adapted for sewed attachment to a first piece of material. In addition, the socket member includes a socket portion that defines a receiving cavity and a cavity lip that leads into the receiving cavity.

Likewise, an opposing stud member is provided. The opposing stud member is configured and adapted for sewed attachment to a second piece of material. Importantly, the stud member includes a stud portion that defines a projecting outer lip configured for engagement with the socket portion of the socket member. In this way, the first and second pieces of material can be detachably joined.

Importantly, the socket member further comprises an integrally formed socket flange that extends outward from the socket portion to define a sewing region having a continuous unbroken surface. The socket flange is provided to receive stitches for stitching the socket member to the first piece of material. In this way, the stitch penetrations through the sewing region of the socket flange are produced only from the sewing process.

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

Similarly, the stud member includes an integrally formed stud flange that extends outward from the stud portion to define a sewing region having a continuous unbroken surface. Like the socket flange, the stud flange is provided to receive stitches for stitching the stud member to the second piece of material. Accordingly, the stitch penetrations through the sewing region of the stud flange are produced only from the sewing process.

In another aspect of the invention, the stud member and the socket member are each monolithically formed of one integral piece of resilient material.

In a further aspect of the invention the stud member further comprises a passage through the stud portion so that the material stitched to the stud member is in communication with the receiving cavity of the socket member.

In addition, another aspect of the invention includes a stud member having a plurality of stud portions.

The foregoing and other objects, features, and advantages of this invention will become more readily apparent from the following detailed description of a preferred embodiment which proceeds with reference to the accompanying drawings, wherein the preferred embodiment of the invention is shown and described, simply by way of illustration of the best mode contemplated of carrying out the invention. As will be realized, the invention is capable of other and different embodiments, and its several

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

details are capable of modifications in various obvious respects, all without departing from the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the preferred embodiment illustrating a sewable snap fastener having a socket member and a stud member shown in the unsnapped configuration.

FIG. 2 is a perspective view of the preferred embodiment illustrating a sewable snap fastener having a socket member and a stud member illustrated in the engaged snapped position.

FIG. 3 is a sectional view illustrating a sewable snap fastener just prior to the socket member and the stud member thereof being snapped together.

FIG. 4 is a sectional view taken along line 4-4 of a two pieces of material stitched to a sewable snap fastener illustrating a socket member and a stud member thereof being

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

snapped together to hold the material in an adjacent position.

FIG. 5 is a perspective view of a pouch with a closure flap constructed of material wherein a socket member is stitched to the flap, and a plurality of stud members are stitched to a portion of the pouch so that the socket portion can be snapped to either of the stud portions depending on how tight the user desires the flap to be connected to the pouch.

FIG. 6 is an alternate embodiment sewable snap fastener illustrating an alternate embodiment socket.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Referring now to the drawings, indicated generally at 20 is a sewable snap fastener constructed of resilient material for receiving stitches 22 from a sewing process where a needle (not illustrated) in the sewing process penetrates the sewable snap fastener 20 thereby creating a hole for the required stitch. The sewable snap fastener 20 is provided for detachably fastening together two opposing pieces of material 24-26. In brief, the sewable snap fastener 20 comprises a socket member 28 configured and

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

adapted for sewed attachment to a first piece of material 24. In addition, the socket member 28 includes a socket portion 30 that defines a receiving cavity 32 and a cavity lip 34 that leads into the receiving cavity 32.

Likewise, an opposing stud member 38 is provided. The opposing stud member 38 is configured and adapted for sewed attachment to a second piece of material 26. Importantly, the stud member 38 includes a stud portion 40 that defines a projecting outer lip 42 configured for engagement with the socket portion 30 of the socket member 28. In this way, the first and second pieces of material 24, 26 can be detachably joined.

Importantly, the socket member 28 further comprises an integrally formed socket flange 44 that extends outward from the socket portion 30 to define a sewing region 46 having a continuous unbroken surface 48. The socket flange 44 is provided to receive stitches 22 for stitching the socket member 28 to the first piece of material 24. In this way, the stitch penetrations through the sewing region 46 of the socket flange 44 are produced only from the needle employed in the sewing process.

Similarly, the stud member 38 includes an integrally formed stud flange 52 that extends outward from the stud portion 40 to define a sewing region 54 having a continuous unbroken surface 56. Like the socket flange 44, the stud flange 52 is provided to receive stitches 22 for stitching

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

the stud member 38 to the second piece of material 26. Accordingly, the stitch penetrations through the sewing region 54 of the stud flange 52 are produced only from the sewing process.

Considering now in more detail the structure of the components from which a sewable snap fastener 20 is constructed, a preferred embodiment is generally illustrated in FIGS. 1 through 3. With reference to the socket member 28, the socket portion 30 comprises a socket extension 58 that extends outward from the socket flange 44. For purposes including ease of construction and monolithic molding, the socket extension 58 extends substantially in a normal or perpendicular direction from the socket flange 44 and is substantially annular or round in shape. However, it should be noted that the socket extension 58 could be constructed with any "foot print" or shape including rectangular, triangular, oval as well as many other shapes.

As noted above, the socket portion 30 defines a receiving cavity 32 which extends completely through the socket extension 58, and continues through to a point substantially flush with the back surface 60 of socket flange 44. In this way, the receiving cavity 32 is open at both ends. This feature is significant because it allows particles, such as dirt, to pass through and not become lodged within the receiving cavity 32. In addition, when the socket member 28 is sewn the a piece of fabric or

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

material, the stitches are only placed in two rows, one on either side of the socket portion 30. In this way, any dirt can be completely flushed from behind the socket member 38. Moreover, the stud member 38 is similarly sewn to material for the same reason.

Importantly, the receiving cavity 32 defines a cavity lip 34 at the outer most portion of socket extension 58. In the preferred embodiment, the cavity lip 34 is created by a cavity bore 62 of a predetermined diameter to create an interference fit with the stud portion 40 as will be discussed more fully in the following.

It should be noted that the cavity bore 62 extends approximately half way through the receiving cavity 32 wherein a larger diameter counterbore 64 is disposed. The counter bore 64 extends from the back surface 60 to the cavity bore 62 thereby creating a step 66. As will be seen below, the step 66 creates a surface to secure the stud portion 40 in place.

Turning again to FIGS. 1 through 3, a stud member 38 is illustrated showing a stud portion 40 extending outward from stud flange 52. Like the socket extension 58, the stud portion 40 is annular or cylindrical in shape. Accordingly, in the preferred embodiment, the cylindrical shape creates a radially outer lip 68 disposed around the outermost point or rim of the stud portion 40. The radially outer lip 68 is sized to be slightly larger in diameter than the cavity bore

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

62 of the socket extension 58. In this way, the stud member 38 is fastened to, i.e., secured to the socket member 28 when the two pieces are brought together or fastened such that the radially outer lip 68 rests within the counterbore 64, beyond step 66 as best illustrated in FIG. 4. Accordingly, the distance that the stud portion 40 extends outward from the stud flange 52 is determined by the distance required to place the radially outer lip 68 beyond step 66 when the sewable snap fastener 20 is in the fastened position as shown in FIG. 4.

It should also be understood that in the preferred embodiment, a transversely disposed compression slot 70 is provided as illustrated in FIG. 1. Typically, the depth of compression slot 70 is approximately half the distance that the stud portion 40 extends outward from the stud flange 52. In this way, fastening of the stud member 38 to the socket member 28 is easily facilitated as the compression slot 70 permits the stud portion 40 to flex, see arrows 71, as the same is directed through the cavity bore 62 as shown by arrow 73 .

Importantly, like the socket member 28, the stud portion 40 includes a centrally disposed (coaxial) passage 72 that extends from the outer most portion of the stud portion 40, through the same to the back surface 74 of stud member 38. This passage 72 also allows particles like dirt to pass through, i.e., channeled away from, and out of the

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

snap fastener 20 toward either piece of material 24, 26 thereby preventing the dirt or debris from becoming lodged within. Accordingly, when the sewable snap fastener is fastened, there is an open passage or channeling means within the same from the first piece of material 24 to the second piece of material 26. as illustrated in FIG. 4.

Directing attention now to FIG. 5 another embodiment is illustrated where two stud members 38 are adjacently disposed on a pouch 76. With this construction, the socket member 28 disposed on flap 78 can engage either stud portion 40 according to how tightly the user desires to close flap 78. Moreover, a stud member could be formed to include a plurality of stud portions to suit any particular situation.

Turning now to FIG. 6 an further embodiment is illustrated where the socket member 82 is constructed without a socket extension. Accordingly, the receiving cavity 84 is created by a single bore approximately the diameter of the cavity bore 62 of a preferred embodiment socket member 28.

Finally, it should be noted that the manufacture of a sewable snap fastener 20 could be accomplished by any modern method of molding or casting of resilient materials like plastic or similar materials. In this way, the sewable snap fastener 20 is a continuous monolithic construction.

Having illustrated and described the principles of my invention in a preferred embodiment thereof, it should be

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100

readily apparent to those skilled in the art that the invention can be modified in arrangement and detail without departing from such principles. I claim all modifications coming within the spirit and scope of the accompanying claims.

William G. Forster
Attorney at Law
P.O. Box 577
Sumner, WA 98390
TEL: (253) 891-0100